



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

REGION VIII

999 18th STREET - SUITE 500  
DENVER, COLORADO 80202-2466

JAN 23 1998

Ref: 8P2-W-GW

CERTIFIED MAIL  
RETURN RECEIPT REQUESTED

Ms. Kathy Turner  
Petroleum Engineering Technician  
Petroglyph Operating Company, Inc.  
6209 North Highway 61  
Hutchinson, Kansas 67502

RE: **UIC MINOR PERMIT MODIFICATION**  
**Conversion of Additional Well to**  
**Antelope Creek Waterflood**  
EPA Area Permit UT2736-00000  
Duchesne County, Utah

Dear Ms. Turner:

Your letter of December 17, 1997, requesting that the following production well be converted to a Class II enhanced oil recovery well and added to the Antelope Creek Waterflood, as authorized under EPA Area Permit #UT2736-00000, is hereby granted.

<u>NAME</u>	<u>LOCATION</u>	<u>EPA WELL PERMIT NO.</u>
<i>Ute Tribal #30-16</i>	SE/SE Section 30 T 5 S - R 3 W Duchesne County, UT	<b>#UT2736-04417</b>

This additional well is within the boundary of the existing area permit for the Antelope Creek Waterflood (UT2736-00000), and this addition is made by minor permit modification according to the terms and conditions of that permit. Unless specifically mentioned in this Minor Permit Modification, all terms and conditions of the original permit will apply to the construction, operation, monitoring, and plugging and abandonment of this additional injection well. The proposed well location, well schematic, conversion procedures, plugging and abandonment plan and schematic, submitted by your office, have been reviewed and approved as follows:

- (1) The **conversion** of this production well has been reviewed, and found satisfactory, therefore, no corrective action is required.



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Conversion  
Antelope Creek Waterflood  
EPA Area Permit UT2736-00000  
Duchesne County, Utah

Scan under  
UT 20736 - 00000  
66  
Modification - Minor  
Mod Approved 1/23/1998.2  
Will need to link  
with UT20736-04417  
in new database also  
under 81 Add Well to  
Area Permit

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- (2) **Maximum injection pressure (Pmax)** - the permittee submitted a list of six (6) individual zones, within the Ute Tribal #30-16, which were individually fraced and established an average fracture gradient (Fg) of 1.04 psi/ft. which was derived from instantaneous shut-in pressures (ISIP) from each zone. This Fg is acceptable to the Environmental Protection Agency (EPA), and a theoretical maximum allowable surface injection pressure (Pmax), for this well, may be calculated as shown below:

$$P_{max} = [F_g - 0.433 (S_g)] d$$

Where:  $P_{max}$  = Maximum surface injection pressure at wellhead

$d$  = 4324' shallowest perforations

$S_g$  = Specific gravity of injected water

$$P_{max} = [1.04 - .433 (1.00)] 4324$$

$$P_{max} = 2625 \text{ psig}$$

Until such time as the permittee demonstrates that a fracture gradient other than 1.04 psi/ft applies to the disposal zones of this newly converted well, the maximum allowable wellhead injection pressure (**Pmax**) for this well will be 2625 psig.

- (3) The **plugging and abandonment plan and schematic**, submitted by your office, has been reviewed, and approved.

Prior to commencing injection into this well, permittee must fulfill permit condition Part II, C. 2. and have received **separate written authorization to inject by the Environmental Protection Agency**. In summary, these requirements for your newly permitted injection well are:

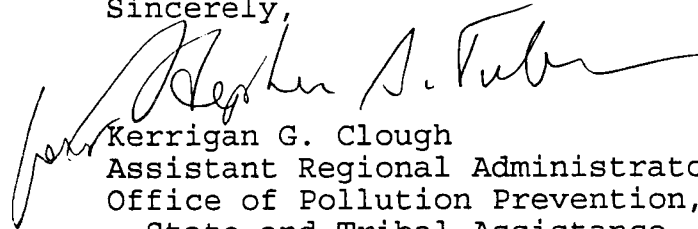
- (1) All conversion is complete and the permittee has submitted a completed **Well Rework Record (EPA Form 7520-12)**.
- (2) The pore pressure has been determined.
- (3) The well has successfully completed and passed a **mechanical integrity test (MIT)**; MIT guidance and EPA form enclosed.

All other provisions and conditions of the permit remain as originally issued.

If you have any questions, please contact Mr. Chuck Williams at (303) 312-6625.

Also, please direct the above requirements to Mr. Williams at the above letterhead address, citing **MAIL CODE 8P2-W-GW**. Thank you for your continued cooperation.

Sincerely,



Kerrigan G. Clough  
Assistant Regional Administrator  
Office of Pollution Prevention,  
State and Tribal Assistance

Enclosure: MIT Guidance and EPA Form 7520-12

cc: Mr. Ronald Wopsock, Chairman  
Uintah & Ouray Business Committee

Ms. Elaine Willie, Environmental Director  
Ute Indian Tribe

Norman Cambridge  
BIA - Uintah & Ouray Agency

Mr. Jerry Kenczka  
BLM - Vernal District Office

Mr. Gilbert Hunt  
State of Utah Natural Resources  
Division of Oil, Gas & Mining

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*Handwritten notes and signatures:*  
 12/29/97 *Jac*  
 1/20/98 *W. Monahan*  
 1/20/98 *mailed*  
 1/21/98 *POA*  
 1/21/98 *SAOsh*  
 1/22/98 *DRUG*  
 1/22/98 *SP2-W-GW*  
 1/22/98 *1-25-98*

- (2) **Maximum injection pressure (Pmax)** - the permittee submitted a list of six (6) individual zones, within the Ute Tribal #30-16, which were individually fraced and established an average fracture gradient (Fg) of 1.04 psi/ft. which was derived from instantaneous shut-in pressures (ISIP) from each zone. This Fg is acceptable to the Environmental Protection Agency (EPA), and a theoretical maximum allowable surface injection pressure (Pmax), for this well, may be calculated as shown below:

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BIA - Uintah & Ouray Agency

Mr. Jerry Kenczka  
BLM - Vernal District Office

Mr. Gilbert Hunt  
State of Utah Natural Resources  
Division of Oil, Gas & Mining

FCD: December 24, 1997, car, jac, A:\MNRMD-30.16

1/27/98 JC 3205C (4th Trial # 30-16)

**SENDER:**

- Complete items 1 and/or 2 for additional services.
- Complete items 3, 4a, and 4b.
- Print your name and address on the reverse of this form so that we can return this card to you.
- Attach this form to the front of the mailpiece, or on the back if space does not permit.
- Write "Return Receipt Requested" on the mailpiece below the article number.
- The Return Receipt will show to whom the article was delivered and the date delivered.

I also wish to receive the following services (for an extra fee):

- ☐ Addressee's Address
- ☐ Restricted Delivery

Consult postmaster for fee.

3. Article Addressed to:  
**Ms. Kathy Turner**  
**Geology/Petroleum Engineering Technician**  
**Petroglyph Operating Company, Inc.**  
**P.O. Box 1839**  
**Hutchinson, KS 67504-1839**

4a. Article Number  
**P 164 014 432**

4b. Service Type  
☐ Registered ☒ Certified  
☐ Express Mail ☐ Insured  
☐ Return Receipt for Merchandise ☐ COD

7. Date of Delivery  
**JAN 30 1998**

5. Received By: (Print Name)  
**Kristine L. Brown**

6. Signature: (Addressee or Agent)  
**X Kristine L. Brown**

8. Addressee's Address (Only if requested and fee is paid)  
**reid LG**  
**FEB 2 1998**

PS Form 3811, December 1994 Domestic Return Receipt

Is your RETURN ADDRESS completed on the reverse side?

Thank you for using Return Receipt Service.

1/27/98 JC 3205C  
P 164 014 432

US Postal Service  
**Receipt for Certified Mail**  
No Insurance Coverage Provided.  
Do not use for International Mail (See reverse)

Sent to	<b>Ms. Kathy Turner</b>
Street & Number	<b>Geology/Petroleum Engineering Technician</b>
Post Office Box or ZIP Code	<b>Petroglyph Operating Company, Inc.</b>
Postage	<b>P.O. Box 1839 \$</b>
	<b>Hutchinson, KS 67504-1839</b>
Certified Fee	
Special Delivery Fee	
Restricted Delivery Fee	
Return Receipt Showing to Whom & Date Delivered	
Return Receipt Showing to Whom, Date, & Addressee's Address	
TOTAL Postage & Fees	<b>\$</b>
Postmark or Date	

PS Form 3800, April 1995